

TECHNICAL PAPER INDEX

## 1.2.1 - Food, Drug &amp; Cosmetic Division

QA/QC APPLIED TO A COMMISSARY FOODSERVICE SYSTEM ..... 1  
**R. F. Cichy and R. C. Nicholas**, Michigan State University, East Lansing, MI  
 LCS 020:70:658

OVERCOMING REGULATORY CONSTRAINTS IN QUALITY COSTS ..... 8  
**Earl T. Szymanski**, Abbott Laboratories, North Chicago, IL  
 LCS 353:90:400

CRASH WITHOUT CRISIS: STRATEGIES FOR EMERGENCIES ..... 13  
**Mae-Goodwin Tarver**, Quest Associates Ltd., Park Forest, IL  
 LCS 353:70:400

## 1.2.2 - Automotive Division

LEAD, FOLLOW OR GET OUT OF THE WAY! ..... 21  
**Howard B. Aaron**, DAB Industries, Troy, MI  
 LCS 300:10:400

PROCESS QUALITY CONTROL EVALUATION ..... 31  
**William J. Boskey and Larry G. Edson**, GMC, Cadillac Motor Car Div., Detroit, MI  
 LCS 020:70:437

REDUCING PRODUCT VARIATION THROUGH PROCESS  
 CONTROL SYSTEMS ..... 38  
**James H. Derr**, Ford Motor Company, Dearborn, MI  
 LCS 130:70:437

## 1.2.3 - Quality Circles Technical Committee

QC CIRCLES' TREND IN THE U.S.—A CONCERN ..... 45  
**Wayne S. Rieker and Shaun J. Sullivan**, Qual. Control Circles, Inc., Los Gatos, CA  
 LCS 020:70:000

MARRIAGE OF YOUR "P'S" AND "Q'S" THROUGH QUALITY CIRCLES ..... 50  
**Robert P. Meyer**, Babcock & Wilcox Company, Barberton, OH  
 LCS 670:80:000

MANAGEMENT, PROFESSIONAL AND CLERICAL QUALITY CIRCLES ..... 54  
**Wendy Carol Fencl and Charles A. Aubrey II**, Continental Illinois  
 National Bank, Chicago, IL  
 LCS 670:90:760

## 1.2.4 - Administrative Applications Division

DEFECT REDUCTION—A FACTORY MANAGEMENT APPROACH ..... 62  
**Joseph S. Dollard and Arthur W. Dehne**, Westinghouse Elec. Corp., Baltimore, MD  
 LCS 670:20:436

MEASURING IN-PROCESS QUALITY PERFORMANCE ..... 70  
**John A. Burgess**, Westinghouse Electric Corp., Muncie, IN  
 LCS 340:70:436

PREPARING FOR THE CQE AND CRE EXAMINATIONS ..... 77  
**James R. Bischof**, ADAC Laboratories, Sunnyvale, CA  
 LCS 324:90:099

## 1.2.5 - Vendor/Vendee Technical Committee

RATING "SPECIAL PROCESS" SUPPLIERS ..... 84  
**Eugene H. McAdams**, Eaton Corp., AIL Division, Deer Park, NY  
 LCS 650:40:439

TECHNICAL PAPER INDEX

## 1.2.1 - Food, Drug &amp; Cosmetic Division

QA/QC APPLIED TO A COMMISSARY FOODSERVICE SYSTEM ..... 1  
**R. F. Cichy and R. C. Nicholas**, Michigan State University, East Lansing, MI  
 LCS 020:70:658

OVERCOMING REGULATORY CONSTRAINTS IN QUALITY COSTS ..... 8  
**Earl T. Szymanski**, Abbott Laboratories, North Chicago, IL  
 LCS 353:90:400

CRASH WITHOUT CRISIS: STRATEGIES FOR EMERGENCIES ..... 13  
**Mae-Goodwin Tarver**, Quest Associates Ltd., Park Forest, IL  
 LCS 353:70:400

## 1.2.2 - Automotive Division

LEAD, FOLLOW OR GET OUT OF THE WAY! ..... 21  
**Howard B. Aaron**, DAB Industries, Troy, MI  
 LCS 300:10:400

PROCESS QUALITY CONTROL EVALUATION ..... 31  
**William J. Boskey and Larry G. Edson**, GMC, Cadillac Motor Car Div., Detroit, MI  
 LCS 020:70:437

REDUCING PRODUCT VARIATION THROUGH PROCESS  
 CONTROL SYSTEMS ..... 38  
**James H. Derr**, Ford Motor Company, Dearborn, MI  
 LCS 130:70:437

## 1.2.3 - Quality Circles Technical Committee

QC CIRCLES' TREND IN THE U.S.—A CONCERN ..... 45  
**Wayne S. Rieker and Shaun J. Sullivan**, Qual. Control Circles, Inc., Los Gatos, CA  
 LCS 020:70:000

MARRIAGE OF YOUR "P'S" AND "Q'S" THROUGH QUALITY CIRCLES ..... 50  
**Robert P. Meyer**, Babcock & Wilcox Company, Barberton, OH  
 LCS 670:80:000

MANAGEMENT, PROFESSIONAL AND CLERICAL QUALITY CIRCLES ..... 54  
**Wendy Carol Fencl and Charles A. Aubrey II**, Continental Illinois  
 National Bank, Chicago, IL  
 LCS 670:90:760

## 1.2.4 - Administrative Applications Division

DEFECT REDUCTION—A FACTORY MANAGEMENT APPROACH ..... 62  
**Joseph S. Dollard and Arthur W. Dehne**, Westinghouse Elec. Corp., Baltimore, MD  
 LCS 670:20:436

MEASURING IN-PROCESS QUALITY PERFORMANCE ..... 70  
**John A. Burgess**, Westinghouse Electric Corp., Muncie, IN  
 LCS 340:70:436

PREPARING FOR THE CQE AND CRE EXAMINATIONS ..... 77  
**James R. Bischof**, ADAC Laboratories, Sunnyvale, CA  
 LCS 324:90:099

## 1.2.5 - Vendor/Vendee Technical Committee

RATING "SPECIAL PROCESS" SUPPLIERS ..... 84  
**Eugene H. McAdams**, Eaton Corp., AIL Division, Deer Park, NY  
 LCS 650:40:439

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

|   |     |
|---|-----|
| COMPUTERIZED SUPPLIER EVALUATION .....                                      | 90  |
| <i>Arthur R. Blank</i> , Fiat-Allis North America, Inc., Springfield, IL    |     |
| LCS 351:40:439  |     |
| VENDOR-VENDEE RELATIONSHIP FOR QUALITY SYSTEM IN DEVELOPING COUNTRIES ..... | 95  |
| <i>A. F. Rashed</i> , King Abdulaziz University, Saudi Arabia, and          |     |
| <i>M. Metwally</i> , Gulf Polytechnic, Bahrain                              |     |
| LCS 650:70:400  |     |
| 1.2.6 — Inspection Division   |     |
| THE MANY FACES OF THE QUALITY INSPECTOR .....                               | 101 |
| <i>H. James Harrington</i> , IBM Corp., San Jose, CA                        |     |
| LCS 300:70:400  |     |
| PRODUCTIVITY MEASUREMENTS OF INSPECTORS .....                               | 108 |
| <i>Faz M. Ulla</i> , IBM Corp., San Jose, CA                                |     |
| LCS 300:20:439  |     |
| A TOTAL CALIBRATION SYSTEM INCLUDES THE INSPECTOR .....                     | 118 |
| <i>David Pettigrew</i> , La Grange, IL                                      |     |
| LCS 324:70:099  |     |
| 1.2.7 — Quality Costs Technical Committee                                   |     |
| PRINCIPLES OF QUALITY COSTS—I .....   | 124 |
| <i>Frank J. Corcoran</i> , Singer Kearfott Division, Little Falls, NJ, and  |     |
| <i>Jack Campanella</i> , Fairchild Republic Company, Farmingdale, NY        |     |
| LCS 353:10:000  |     |
| PRINCIPLES OF QUALITY COSTS—II .....  | 124 |
| <i>Jack Campanella</i> , Fairchild Republic Company, Farmingdale, NY, and   |     |
| <i>Frank J. Corcoran</i> , Singer Kearfott Division, Little Falls, NJ       |     |
| LCS 353:10:000  |     |
| MEASURING QUALITY COSTS BY WORK SAMPLING .....                              | 138 |
| <i>L. James Esterby</i> , Victor Equipment Company, Denton, TX              |     |
| LCS 353:10:000  |     |
| 1.3.1 — Metrology Technical Committee                                       |     |
| DIGITAL CALIBRATION: THE KEY TO ATE PRODUCTIVITY .....                      | 145 |
| <i>Donald R. Tobey</i> , Science Applications, Inc., Dallas, TX             |     |
| LCS 770:60:991  |     |
| LASER TECHNOLOGY PROVIDES QUALITY AND PRODUCTIVITY .....                    | 148 |
| <i>George Gugliotta</i> , Automation Systems, Inc., Brookfield, CT          |     |
| LCS 710:70:438  |     |
| NEW METROLOGY CONCEPTS THROUGH PRODUCT QC METHODS .....                     | 153 |
| <i>Rolf B. F. Schumacher Sr.</i> , Rockwell International, Anaheim, CA      |     |
| LCS 710:70:000  |     |
| 1.3.2 — Automotive Division   |     |
| MEASURING PERFORMANCE .....   | 158 |
| <i>Hans J. Bajaria</i> , Multiface Inc., Dearborn Heights, MI, and          |     |
| <i>Gregory F. Gruska</i> , GMC, Chevrolet Motor Division, Warren, MI, and   |     |
| <i>Jo Ann Goble</i> , GMC, Chevrolet Motor Division, Warren, MI             |     |
| LCS 344:10:000  |     |

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

|  |     |
|--|-----|
| IMPLEMENTING CONSUMER QUALITY EXPECTATIONS .....   | 162 |
| <i>Jo Ann Goble</i> , GMC, Chevrolet Motor Division, Warren, MI, and<br><i>Gregory F. Gruska</i> , GMC, Chevrolet Motor Division, Warren, MI, and<br><i>Hans J. Bajaria</i> , Multiface Inc., Dearborn Heights, MI<br>LCS 860:10:000 |     |
| A VENDOR QUALITY PERFORMANCE INFORMATION SYSTEM .....  | 168 |
| <i>Robert J. Flynn</i> , General Motors Corporation, Warren, MI<br>LCS 650:90:400  |     |
| 1.3.3 - Quality Circles Technical Committee  |     |
| IMPACT OF QUALITY CIRCLES ON PEOPLE AND QUALITY .....  | 174 |
| <i>Ralph J. Barra</i> , Westinghouse Electric Corp., Pittsburgh, PA<br>LCS 300:70:436  |     |
| WHY THE QC CIRCLES?: A QUALITY MAN'S VIEW .....  | 179 |
| <i>Yong J. Lee</i> , AMP, Inc., Harrisburg, PA<br>LCS 670:80:099   |     |
| GROUP DYNAMIC TRAINING IN QC CIRCLES .....   | 182 |
| <i>Orjan B. Alexanderson</i> , EKAB, Storfors, Sweden<br>LCS 670:90:000  |     |
| QUALITY CIRCLES IN THE 80'S AND BEYOND .....   | 190 |
| <i>Robert G. Tate, Jr.</i> , Quality Circle Institute, Germantown, TN<br>LCS 670:70:000  |     |
| 1.3.4 - Banking Technical Committee  |     |
| A BANKING QUALITY COST MODEL, ITS USES AND RESULTS .....   | 195 |
| <i>Charles A. Aubrey II</i> and <i>Debra A. Zimbler</i> , Continental Illinois<br>National Bank, Chicago, IL<br>LCS 353:70:760   |     |
| QUALITY STATE OF THE ART IN BANKING—SURVEY RESULTS .....   | 202 |
| <i>John A. Henke</i> , Northwestern National Bank of Minneapolis, Minneapolis, MN<br>LCS 345:70:760  |     |
| QUALITY CONTROL IN BANKING; AN EXAMPLE .....   | 206 |
| <i>Lawrence A. Eldridge</i> , Continental Illinois National Bank & Trust, Chicago, IL<br>LCS 310:10:760  |     |
| 1.3.5 - Vendor/Vendee Technical Committee  |     |
| SUPPLIER PROCESS CONTROL VERSUS PRODUCT CONTROL .....  | 209 |
| <i>Fay E. Tolman</i> , Xerox Corporation, Webster, NY<br>LCS 110:70:436  |     |
| THE VENDOR: A NEGLECTED QUALITY IMPROVEMENT TOOL .....   | 212 |
| <i>John Mihalasky</i> , New Jersey Institute of Technology, Newark, NJ<br>LCS 351:40:000   |     |
| FAR EAST SOURCING .....  | 217 |
| <i>Alan L. Doty</i> , Digital Equipment Corporation, Westboro, MA<br>LCS 310:40:436  |     |
| 1.3.6 - Technology/Methodology   |     |
| QUALITY AWARENESS—CONTROL WHERE IT COUNTS .....  | 225 |
| <i>Stephen R. Wirkus</i> , Solar Turbines Inc., San Diego, CA<br>LCS 790:70:435  |     |

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

|  |     |
|--|-----|
| PLANNING FOR Q.C. AT SATELLiTE FACILITIES .....                        | 230 |
| John M. Seto, Westinghouse Electric Corp., Baltimore, MD               |     |
| LCS 000:00:400   |     |
| TECHNOLOGY TRANSFERRED TO A DEVELOPING NATION .....                    | 237 |
| Andrew H. West, Westinghouse Electric Corp., Baltimore, MD             |     |
| LCS 320:70:436   |     |
| 1.3.7 — Standards Council-Tutorial                                     |     |
| MULTI-LEVEL QUALITY PROGRAM STANDARDS .....                            | 240 |
| K. C. Ford, Canadian Standards Association, Rexdale, Canada            |     |
| LCS 300:10:000   |     |
| COMPARISON OF MULTI-LEVEL AND GENERIC STANDARDS .....                  | 244 |
| Donald W. Marquardt, E. I. DuPont de Nemours & Company, Wilmington, DE |     |
| LCS 020:70:000   |     |
| APPLYING AN INTERNATIONAL GENERIC SYSTEM STANDARD .....                | 249 |
| Robert W. Peach, W. A. Golomski & Associates, Chicago, IL              |     |
| LCS 020:70:000   |     |
| 2.1.1 — Chemical Division  |     |
| TAKE THE HASSLE OUT OF MANAGING EXPERIMENTAL DATA .....                | 254 |
| Carl Wetzstein, Eastman Kodak Company, Rochester, NY                   |     |
| LCS 640:90:000   |     |
| QC CHARTS—KEY TO QUALITY AND REDUCED ENERGY .....                      | 262 |
| Frank J. Siniabaldi, Jr., St. Regis Paper Company, West Nyack, NY      |     |
| LCS 111:70:426   |     |
| CUMULATIVE SUM CONTROL AND CONTINUOUS PROCESSES .....                  | 270 |
| Alan L. Goodman, E. I. DuPont de Nemours & Company, Wilmington, DE     |     |
| LCS 114:70:428   |     |
| 2.1.2 — Automotive Division  |     |
| DEMING STATISTICAL METHODS—"A NEW AWARENESS" .....                     | 275 |
| Lawrence P. Sullivan, Ford Motor Company, Dearborn, MI                 |     |
| LCS 100:70:400   |     |
| MANAGING FOR QUALITY THROUGH EMPLOYEE INVOLVEMENT .....                | 282 |
| Edward M. Baker, Ford Motor Company, Dearborn, MI                      |     |
| LCS 670:10:000   |     |
| AUTOMOTIVE APPLICATIONS OF ELECTRO-OPTICAL INSPECTION .....            | 285 |
| Timothy R. Pryor, Diffracto Ltd., Windsor, Canada                      |     |
| LCS 760:20:400   |     |
| 2.1.3 — Human Resources Technical Committee                            |     |
| QUALITY—AND CONTROLS .....   | 290 |
| Suresh N. Balani, Howmet Aluminum Corporation, Lancaster, PA           |     |
| LCS 680:70:434   |     |
| THE ANSWER TO "HOW CAN I SELL QUALITY?" .....                          | 296 |
| John H. Farrow, Marquette University, Milwaukee, WI                    |     |
| LCS 310:50:000   |     |

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

|  |     |
|--|-----|
| QUALITY AND PRODUCTIVITY—CONFLICT OR HARMONY.....                                | 301 |
| <b>George Rosenzweig</b> , Technitrol Professional Services, Mississauga, Canada |     |
| LCS 323:90:000   |     |
| 2.1.4 — Government Services Technical Committee                                  |     |
| PRODUCTIVITY—MICROCOMPUTERS AND THE GOVERNMENT .....                             | 305 |
| <b>Henry L. Lefevre</b> , Air Force Accounting & Finance Center, Denver, CO      |     |
| LCS 640:90:991   |     |
| QUALITY CONTROL CIRCLES IN THE FEDERAL GOVERNMENT .....                          | 308 |
| <b>Andrew J. Sherbo</b> , U.S. Military Academy, West Point, NY                  |     |
| LCS 310:70:000   |     |
| ELIMINATING FEDERAL SPECIFICATIONS .....   | 313 |
| <b>Calvin Stevens</b> , General Services Administration, Atlanta, GA             |     |
| LCS 650:40:991   |     |
| 2.1.5 — Systems Engineering Technical Committee                                  |     |
| QUALITY LABORATORIES—TOOLS FOR PRODUCTIVITY .....                                | 319 |
| <b>Harold V. Cowan</b> , Ford Aerospace & Communications Corp., Harbor City, CA  |     |
| LCS 112:90:099   |     |
| THE QUALITY INFORMATION SYSTEM.....  | 327 |
| <b>Bruce Munro</b> , General Dynamics, Groton, CT                                |     |
| LCS 640:70:434   |     |
| NEW STATISTICAL METHODOLOGIES IN A QA AUDIT SYSTEM .....                         | 335 |
| <b>Thomas C. Hsiang</b> and <b>John J. Gordon</b> , Western Electric, Newark, NJ |     |
| LCS 345:70:436   |     |
| 2.1.6 — Reliability Division   |     |
| TEN RULES FOR THE RELIABILITY PROFESSIONAL.....                                  | 343 |
| <b>J. Douglas Ekings</b> , Xerox Corporation, Webster, NY                        |     |
| LCS 810:10:000   |     |
| FAILURE-RATE ASSESSMENT WITH A DIFFUSE, INITIAL PRIOR                            |     |
| DISTRIBUTION USING FIELD—FAILURE DATA .....                                      | 352 |
| <b>Mitchell O. Locks</b> , Oklahoma State University, Stillwater, OK             |     |
| LCS 800:70:400   |     |
| FAULT TREE ANALYSIS—HOW ARE WE DOING?.....                                       | 355 |
| <b>Dev Raheja</b> , Technology Management, Inc., Laurel, MD                      |     |
| LCS 660:60:000   |     |
| 2.1.7 — Quality Costs Technical Committee—Tutorial                               |     |
| GUIDE FOR REDUCING QUALITY COSTS .....   | 360 |
| <b>Ronald J. Williams</b> , Leviton Manufacturing Company, Inc., Littleneck, NY  |     |
| LCS 353:10:000   |     |
| GUIDE FOR MANAGING VENDOR QUALITY COSTS .....                                    | 367 |
| <b>William O. Winchell</b> , General Motors Corporation, Detroit, MI             |     |
| LCS 351:10:000   |     |
| A PARTICIPATORY APPROACH TO QUALITY .....  | 373 |
| <b>Alvin O. Gunneson</b> , Revlon—Worldwide, Edison, NJ                          |     |
| LCS 300:90:000   |     |

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

2.2.1 - Vendor/Vendee Technical Committee

FOR GOODNESS SAKE, HELP! ..... 379  
**Richard A. Maass**, Abbott Laboratories, North Chicago, IL  
LCS 351:40:000

2.2.2 - Automotive Division

OPTIMIZING QUALITY THROUGH VARIATION SIMULATION ..... 382  
**Richard K. Holmes** and **Joseph M. Michalek**, GMC, Chevrolet Motor  
Division, Warren, MI  
LCS 660:00:000

QUALITY CONTROL-FULL SPIRAL ..... 391  
**Edward J. Diggs**, Rubery Owen-Rockwell, Ltd., England  
LCS 330:10:000

JEEP QUALITY-COME SEE FOR YOURSELF! ..... 397  
**Richard M. Miller**, Jeep Corporation, Toledo, OH  
LCS 310:70:437

2.2.3 - Statistics Division

ATTRIBUTES SAMPLING FOR MULTICHARACTERISTIC ITEMS ..... 404  
**Kenneth E. Case** and **John Bert Keats**, Oklahoma State University, Stillwater, OK,  
and **Shinya Ozaki**, Nippan Kokan K.K., Yokohama, Japan  
LCS 222:70:000

SAMPLING WHEN THE MEAN AND VARIANCE ARE IMPORTANT ..... 410  
**David E. Fyffe**, Georgia Institute of Technology, Atlanta, GA  
LCS 221:70:000

OPTIMIZING SAMPLING PLANS USING BIMODEL FITTING ..... 418  
**John H. Glaser** and **Cephas B. Rogers**, Polaroid Corporation, Waltham, MA  
LCS 221:70:439

2.2.4 - International Session

QUALITY-PRODUCTIVITY (80'S CHALLENGE FOR MEXICO) ..... 425  
**Agapito Gonzalez Hernandez**, IMECCA, A.C., Mexico City, Mexico  
LCS 670:10:886

CUSTOMER PERCEIVED QUALITY LEVELS ..... 428  
**R. M. McRobb**, Bedford, England  
LCS 344:90:437

THE INTEGRATION PHASE ..... 433  
**Carl A. Kofeed**, Danfoss A/S, Nordberg, Denmark  
LCS 323:10:439

2.2.5 - Computer Aided Quality Technical Committee

COMPUTERS AND PRODUCTIVITY ..... 441  
**John A. Keane**, John A. Keane & Associates, Princeton, NJ  
LCS 020:10:400

COMPUTER GRAPHICS REVERSED FOR QUALITY SUPERVISION ..... 447  
**Sven Fjeldaa**, SINTEF NTH, Production Engineering Laboratory,  
Trondheim, Norway  
LCS 710:20:433

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

|  |     |
|--|-----|
| MINIMUM SAMPLE SIZES FOR HYPERGEOMETRIC PLANS .....                                | 453 |
| <b>William A. Hailey</b> , University of North Carolina—Greensboro, Greensboro, NC |     |
| LCS 220:70:400   |     |
| 2.2.6 — Technology/Methodology   |     |
| COST OF QUALITY AS A CUSTOMER PERCEPTION .....                                     | 459 |
| <b>Samar K. Bhuyan</b> , GMC, Fisher Body Division, Warren, MI                     |     |
| LCS 350:60:439   |     |
| ASSURANCE OF AVAILABILITY AND LIFE CYCLE COSTS .....                               | 465 |
| <b>James E. Mayben</b> , General Dynamics, Fort Worth, TX                          |     |
| LCS 860:70:439   |     |
| AMERICAN QUALITY AND PRODUCTIVITY IN PERSPECTIVE .....                             | 475 |
| <b>Roger G. Langevin</b> , Argyle Associates Inc., South Salem, NY                 |     |
| LCS 300:10:000   |     |
| 2.2.7 — Reliability Division—Tutorial  |     |
| BASIC RELIABILITY TECHNIQUES AND APPLICATIONS .....                                | 481 |
| <b>Kailash M. Bafna</b> , Western Michigan University, Kalamazoo, MI               |     |
| LCS 800:00:000   |     |
| 2.3.1 — Quality Costs Technical Committee  |     |
| MINIMIZING THE COST OF INSPECTION .....  | 485 |
| <b>William J. Latzko</b> , Irving Trust Company, New York, NY                      |     |
| LCS 221:00:000   |     |
| IMPROVED PRODUCTIVITY THROUGH QUALITY MANAGEMENT—I .....                           | 491 |
| <b>Frank Scanlon</b> , The Hartford Insurance Group, Hartford, CT                  |     |
| LCS 300:90:400   |     |
| IMPROVED PRODUCTIVITY THROUGH QUALITY MANAGEMENT—II .....                          | 491 |
| <b>John T. Hagan</b> , ITT Corp., New York, NY                                     |     |
| LCS 300:90:400   |     |
| 2.3.2 — Automotive Division  |     |
| CHANGING ROLE OF THE QUALITY INSPECTION FUNCTION .....                             | 506 |
| <b>James A. Sears</b> , The General Tire & Rubber Co., Akron, OH                   |     |
| LCS 330:10:430   |     |
| APPROACHES TO BOLTED JOINT ANALYSIS AND ASSEMBLY .....                             | 513 |
| <b>Gary L. Minter</b> , Deere & Company Technical Center, Moline, IL               |     |
| LCS 030:70:439   |     |
| QUALITY—THE CUSTOMER VIEW .....  | 519 |
| <b>Jack Joseph Shaw</b> , Northern Telecom, Inc., Nashville, TN                    |     |
| LCS 345:50:439   |     |
| 2.3.3 — Quality Circles Technical Committee  |     |
| “COG”—CIRCLE OPERATIONAL GUIDELINES .....  | 527 |
| <b>Joyce C. Macdonald</b> , Tektronix, Inc., Beaverton, OR                         |     |
| LCS 323:80:438   |     |
| DEVELOPING SELF-FACILITATING QUALITY CIRCLES .....                                 | 531 |
| <b>Aileen F. Rykiel</b> and <b>Gerald E. Swartz</b> , Westinghouse Electric Corp., |     |
| Baltimore, MD  |     |
| LCS 320:10:000   |     |

## 1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

### 2.3.4 — Quality Auditing Technical Committee

|   |     |
|---|-----|
| QUALITY AUDITING OF NEW PRODUCTS .....                                      | 534 |
| <b>Kenneth S. Love</b> , The Gillette Company, Boston, MA                   |     |
| LCS 345:90:000  |     |
| CORPORATE QUALITY AUDIT/SURVEY .....  | 538 |
| <b>Ervin F. Miller</b> , Eaton Corporation, Milwaukee, WI                   |     |
| LCS 340:10:439  |     |
| NEW AUDIT TRENDS—KEY TO PRODUCTIVITY AND PROFIT .....                       | 546 |
| <b>James L. Thresh</b> , James L. Thresh & Associates, Inc., Long Beach, CA |     |
| LCS 345:70:000  |     |

### 2.3.5 — Technology/Methodology

|  |     |
|--|-----|
| HENRI FAYOL: THE FIRST QUALITY PROFESSIONAL? .....                 | 552 |
| <b>John D. Breeze</b> , Hermes Electronics, Ltd., Canada           |     |
| LCS 600:10:000   |     |
| YIELD = QUALITY CONSCIOUSNESS + QUALITY WORK LIFE .....            | 558 |
| <b>Marge Martin</b> , Westinghouse Electric Corp., Hunt Valley, MD |     |
| LCS 670:90:400   |     |
| IMPLEMENTING YIELD IMPROVEMENT PROGRAMS .....                      | 563 |
| <b>Wesley A. Huff</b> , Westinghouse Electric Corp., Baltimore, MD |     |
| LCS 310:70:400   |     |

### 2.3.6 — Electronics Division

|   |     |
|---|-----|
| QUALITY SYSTEM CONCEPTS IN THE CAD/CAM ERA .....  | 569 |
| <b>Thomas J. Phillipp</b> , General Dynamics, San Diego, CA                                       |     |
| LCS 660:70:400  |     |
| DETAILED DEFECT REPORTING—A KEY TO PRODUCTIVITY .....   | 574 |
| <b>Larry R. Coleman</b> , Rockwell International, Richardson, TX                                  |     |
| LCS 710:70:436  |     |
| IMPROVING RELIABILITY THROUGH TEMPERATURE CYCLING .....   | 580 |
| <b>Shirish N. Trivedi</b> , Westinghouse Electric Corp., Hunt Valley, MD                          |     |
| LCS 850:70:436  |     |
| TOWARD A PAPERLESS FACTORY .....  | 584 |
| <b>Robert V. Caine, Thomas H. Poyer and Thomas J. Nolan</b> , General Electric Company, Utica, NY |     |
| LCS 760:70:437  |     |

### 2.3.7 — Standards Committee

|  |     |
|--|-----|
| PROGRESS IN INTERNATIONAL QUALITY DEFINITIONS .....                  | 592 |
| <b>Richard A. Freund</b> , Eastman Kodak Company, Rochester, NY      |     |
| LCS 020:90:000   |     |
| AN ISO PROPOSAL FOR SELECTING A SAMPLING PLAN .....                  | 596 |
| <b>August B. Mundel</b> , White Plains, NY                           |     |
| LCS 221:00:000   |     |
| THE SYNERGISM OF ANSI/ASQC Z1.9 AND ANSI/ASQC Z1.4 .....             | 602 |
| <b>Edward G. Schilling</b> , General Electric Company, Cleveland, OH |     |
| LCS 220:70:400   |     |

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

2.4.1 - Aerospace & Defense Division

QUALITY CONTROL IN AIRLINE OPERATION ..... 607  
**Frank C. Hays**, Delta Air Lines, Atlanta, GA  
LCS 300:70:800

QUALITY—OUR CHALLENGE ..... 611  
**Hiroshi Iwasaki**, Japan Air Lines Company Ltd., Tokyo, Japan  
LCS 300:70:545

2.4.3 - Statistics Division

RISK AND HUMAN RESOURCES ARE FACTORS IN SAMPLING ..... 619  
**Charles A. Mills**, Westinghouse Canada, Inc., Burlington, Canada  
LCS 342:10:000

THE TRAINING OF EMPLOYEES IN STATISTICAL TECHNIQUES ..... 626  
**Myron A. Wacławiw**, Westinghouse Electric Corp., Baltimore, MD  
LCS 100:70:400

A QUALIFICATION PROCEDURE FOR ATTRIBUTES DATA ..... 632  
**Barbara K. Kimball**, Cutter Laboratories, Inc., Covina, CA  
LCS 720:70:000

2.4.4. - Biomedical Division

GMP'S—QUESTIONS AND ANSWERS ..... 637  
**Patricia Y. Vosteen**, American Society for Quality Control, Milwaukee, WI  
**James R. Bischof**, ADAC Laboratories, Sunnyvale, CA  
LCS 342:70:438

ECONOMIC IMPACT OF THE MEDICAL DEVICE GMP ..... 645  
**Stanley A. Marash**, Stat-A-Matrix-Group, Edison, NJ  
LCS 300:10:400

RECALLS—PROBLEM AND OPPORTUNITY ..... 648  
**James W. Hartman**, Procter & Gamble Company, Cincinnati, OH  
LCS 300:70:880

2.4.5 - Environmental Technical Committee

TRAINING AS A KEY TO HAZARDOUS WASTE COMPLIANCE ..... 653  
**Phillip G. Coop**, Environmental & Safety Designs, Inc., Memphis, TN  
LCS 323:80:400

A QA PROGRAM FOR ENVIRONMENTAL HEALTH RESEARCH ..... 659  
**Karen W. Gold, Patricia A. Cunningham, Lawrence E. Myers, and Nancy H. Sexton**, Research Triangle Institute, Research Triangle Park, NC, and **Ferris B. Benson**, Environmental Protection Agency, Research Triangle Park, NC  
LCS 310:70:991

REVIEW OF QA ACTIVITIES IN THE ENVIRONMENTAL FIELD ..... 667  
**A. Carl Nelson, Jr.**, PEDCo Environmental Inc., Durham, NC  
LCS 310:70:991

2.4.6 - Human Resources Technical Committee

LABOR/MANAGEMENT QUALITY SYSTEMS ..... 674  
**Sidney P. Rubinstein**, Participative Systems, Inc., Princeton, NJ  
LCS 020:90:000

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

|  |     |
|--|-----|
| PLANNING AND IMPLEMENTING QUALITY AWARENESS .....                                  | 683 |
| <b>Edward J. Sappet</b> , Data General Corporation, Westboro, MA                   |     |
| LCS 300:70:000   |     |
| WORKER-ORIENTED PRODUCTIVITY IMPROVEMENT PROGRAM .....                             | 688 |
| <b>Shuichi Yoshida</b> , Nissan Motor Manufacturing Corp., Smyrna, TN              |     |
| LCS 310:70:437   |     |
| 2.4.7 - Energy Division—Tutorial   |     |
| NUCLEAR QUALITY ASSURANCE STANDARDS .....  | 695 |
| <b>Eugene F. Trainor</b> , Cygna Energy Services, Boston, MA                       |     |
| LCS 352:70:400   |     |
| 2.5.1 - Aerospace & Defense Division—Panel   |     |
| ACCEPTANCE INSPECTION TECHNIQUES, A NEW DIRECTION IN                               |     |
| THE 80S? .....   | 696 |
| <b>Ian Alexandre</b> , Westinghouse Electric Corp., Alamo, TN,                     |     |
| <b>Paul G. Baird</b> , Hewlett Packard, Palo Alto, CA,                             |     |
| <b>Harrison M. Wadsworth</b> , Georgia Institute of Technology, Atlanta, GA,       |     |
| <b>H. K. Patel</b> , Bendix Corporation, Dayton, OH, and                           |     |
| <b>August B. Mundel</b> , White Plains, NY   |     |
| LCS 760:70:991   |     |
| 2.5.2 - Textile & Needle Trades Division   |     |
| MAINTAINING STANDARDS IN DIVERSE SATELLITE PLANTS .....                            | 697 |
| <b>Roger L. Wilson</b> , H. H. Cutler Company, Grand Rapids, MI                    |     |
| LCS 352:70:400   |     |
| QUALITY CIRCLES—IMPACT ON TEXTILE PRODUCTIVITY .....                               | 701 |
| <b>William A. Reed</b> , Kurt Salmon Associates, Inc., Atlanta, GA                 |     |
| LCS 670:80:422   |     |
| QUALITY CONTROL IN MFG. OF AUTOMOTIVE FABRICS .....                                | 706 |
| <b>Bernie Thompson</b> , LaFrance Industries of Riegel Textile Corp., LaFrance, SC |     |
| LCS 020:20:422   |     |
| 2.5.3 - Statistics Division  |     |
| SELECTING SAMPLING PROCEDURES CAN BE FUN .....                                     | 709 |
| <b>John J. Heldt</b> , Watkins-Johnson Company, San Jose, CA, and                  |     |
| <b>John D. Breeze</b> , Hermes Electronics Ltd., Canada                            |     |
| LCS 353:70:439   |     |
| STATISTICAL VALIDATION OF QUALITY CONTROL TESTS .....                              | 717 |
| <b>Martin L. Lee, Julia Kantrowitz and</b>   |     |
| <b>Mary Taylor</b> , Travenol Laboratories, Hyland Therapeutics, Los Angeles, CA   |     |
| LCS 523:70:428   |     |
| MARKOVIAN ANALYSIS OF SEQUENCED SAMPLING .....                                     | 725 |
| <b>Maureen S. Heaphy and Gregory F. Gruska</b> , General Motors Corp., Warren, MI  |     |
| LCS 200:70:000   |     |
| 2.5.4 - Biomedical Division  |     |
| HOSPITAL QUALITY MANAGEMENT .....  | 735 |
| <b>Pierre W. Keitges</b> , Physicians Reference Laboratory, Kansas City, MO        |     |
| LCS 300:70:880   |     |

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

|  |     |
|--|-----|
| QC IN MICROBIOLOGY LABS: ESSENTIAL FOR PRODUCTIVITY .....  | 737 |
| <b>Ricardo J. Alvarez, Arlis Dailey and</b><br>Jean Acheson, Gibco Laboratories, Madison, WI<br>LCS 310:70:880   |     |
| DECISION MAKING IN THE CENTERS FOR DISEASE CONTROL .....   | 743 |
| <b>William C. Watson, Jr.</b> , Centers for Disease Control, Atlanta, GA<br>LCS 600:90:991   |     |
| 2.5.5 - Environmental Technical Committee  |     |
| CONTROL OF COPPER ORE ROASTING EXIT GAS QUALITY .....  | 748 |
| <b>Benjamin H. Carpenter</b> , Research Triangle Institute, Research Triangle Park, NC<br>LCS 523:70:433   |     |
| DATA EVALUATION: KEY TO DECISION-MAKING SUCCESS .....  | 756 |
| <b>Gary L. Johnson</b> , Environmental Protection Agency, Research Triangle Park, NC<br>LCS 340:70:991   |     |
| METHODS AND QA FOR ASBESTOS MEASUREMENTS .....   | 760 |
| <b>Donald E. Lentzen, Eugene P. Brantly, Jr. and Karen W. Gold</b> ,<br>Research Triangle Institute, Research Triangle Park, NC<br><b>Michael E. Beard, Joseph J. Breen and Cindy Stroup</b> ,<br>Environmental Protection Agency, Research Triangle Park, NC<br>LCS 310:70:991  |     |
| 2.5.6 - Software Technical Committee   |     |
| SOFTWARE QUALITY--KEY TO PRODUCTIVITY .....  | 767 |
| <b>Vernon W. Bateman</b> , Rockwell International, Anaheim, CA<br>LCS 350:70:099   |     |
| QUALITY PROBLEMS WITH AUTOMATIC TEST EQUIPMENT .....   | 771 |
| <b>Allan C. Stover</b> , Westinghouse Electric Corp., Baltimore, MD<br>LCS 770:70:439  |     |
| FIRMWARE QUALITY ASSURANCE, A PROVEN TECHNIQUE .....   | 777 |
| <b>Kenneth S. Mendis</b> , Raytheon Company, Portsmouth, RI<br>LCS 300:70:400  |     |
| 2.5.7 - Reliability Division--Tutorial   |     |
| A TUTORIAL--E/R NEW TECHNIQUES & THEIR APPLICATIONS .....  | 783 |
| <b>Charles L. Proctor</b> , University of Alaska, Fairbanks, AK,<br><b>Balbir S. Dhillon</b> , University of Ottawa, Ottawa, Canada, and<br><b>Chanan Singh</b> , Texas A&M University, College Station, TX<br>LCS 800:00:000  |     |
| 3.2.1 - Product Safety & Liability Prevention Technical Committee  |     |
| PRODUCT LIABILITY TRIAL .....  | 791 |
| <b>August B. Mundel</b> , White Plains, NY, <b>The Honorable Warren W. Eginton</b> ,<br>U.S. District Court, Bridgeport, CT, <b>Albert M. Stark, Esq.</b> , Stark & Stark,<br>Lawrenceville, NJ, <b>Richard L. Plotkin, Esq.</b> , Pitney, Hardin & Kipp,<br>Morristown, NJ, <b>Ralph A. Evans</b> , Durham, NC, and<br><b>Richard M. Jacobs</b> , Consultant Services Institute, Livingston, NJ<br>LCS 323:00:000 |     |

## 1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

### 3.2.2 - Metals Technical Committee

A QC INFO SYSTEM FOR OIL COUNTRY TUBULAR PRODUCTS ..... 794  
**Carl W. Karrer**, Jones & Laughlin Steel Corp., Youngstown, OH  
LCS 640:90:433

NDT TO INCREASE PRODUCTIVITY—AN EXAMPLE ..... 798  
**James F. Jackson**, Armco, Inc. Research Center, Middletown, OH  
LCS 750:20:434

ASSESSMENT OF ZINC-PHOSPHATED SURFACE QUALITY ..... 805  
**Samuel P. Owusu-Ofori**, Bradley University, Peoria, IL  
LCS 710:70:434

### 3.2.3 - Energy Division

BOOSTING PRODUCTIVITY CRITICAL TASK FOR THE 80'S ..... 811  
**V. Gerald Wright**, Catalytic Inc., Philadelphia, PA  
LCS 000:90:300

QUALITY—A UTILITY'S WAY TO IMPROVED PRODUCTIVITY ..... 821  
**W. Kent Sterrett and Joseph C. Ferrel**, Florida Power and  
Light Company, Miami, FL  
LCS 310:90:549

INTEGRATED PROGRAMS IN QUALITY AND PRODUCTIVITY ..... 825  
**Orlino C. Baldonado**, The E. C. Corporation, Oak Ridge, TN  
LCS 310:70:400

### 3.2.4 - Quality Auditing Technical Committee—Panel

PROPOSED ASQC QUALITY AUDITOR CERTIFICATION PROGRAM ..... 830  
**Robert G. Stenecker**, Abbott Laboratories, North Chicago, IL, **Donald McNeill**,  
Transport Canada, Ottawa, Canada, **Fred W. Van Nest**, Niagara Mohawk Power  
Corporation, Syracuse, NY, and **Walter Uhorchak**, Kennesaw, GA  
LCS 020:20:000

### 3.2.5 - Quality Circles Technical Committee

QUALITY CIRCLES: A MANAGERIAL APPROACH ..... 835  
**Gordon K. Constable, Michael J. Cleary**, Wright State University, Dayton, OH,  
**Robert T. Amsden**, University of Dayton, Dayton, OH, and  
**Davida Amsden**, Dayton, OH  
LCS 670:90:000

QUALITY CIRCLES—BLUE-COLLAR, WHITE-COLLAR AND OTHER HUES .. 841  
**Robert Lozano**, Endevco Corporation, San Juan Capistrano, CA  
LCS 670:10:438

WE THE PEOPLE: AN INSIDE LOOK AT QUALITY CIRCLES ..... 846  
**Gary G. Weinzel**, Westinghouse Electric Corp., Jefferson City, MO  
LCS 670:80:436

BEYOND THE QC CIRCLE ..... 849  
**Walter R. Kazor**, Westinghouse Electric Corp., Tampa, FL  
LCS 670:70:000

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

THE HISTORY OF QUALITY CIRCLES IN THE UNITED STATES ..... 856  
**Michael J. Cleary**, Wright State University, Dayton, OH, and  
**Robert T. Amsden**, University of Dayton, Dayton, OH  
LCS 670:00:000

3.2.6 - Quality Costs Technical Committee

QUALITY COSTS—PAY ..... 864  
**James Demetriou**, ITT Avionics Division, Clifton, NJ  
LCS 353:70:400

MR. CEO, YOU COMPANY'S QUALITY POSTURE IS SHOWING! ..... 866  
**Richard K. Dobbins**, Honeywell Inc., Ft. Washington, PA  
LCS 300:10:000

"Q" COSTS/RESULTS—THE PETROLEUM INDUSTRY ..... 872  
**Clyde W. Brewer**, Otis Engineering Corp., Dallas, TX  
LCS 350:70:429

STUDY COSTS & IMPROVE PRODUCTIVITY ..... 876  
**William J. Ortwein**, Pratt & Whitney Aircraft, Inc., East Hartford, CT  
LCS 353:30:000

3.2.7 - Software Technical Committee—Tutorial

TUTORIAL: SOFTWARE QUALITY, KEY TO RELIABLE SOFTWARE ..... 884  
**Sunil J. Trivedi**, GTE Systems, SSD, Westboro, MA  
LCS 340:70:000

1982 - ASQC QUALITY CONGRESS TRANSACTIONS - DETROIT

STANDBY SPEAKERS

S-1 MULTIVARIATE QUALITY CONTROL: STATE OF THE ART ..... 886  
**Frank B. Alt**, University of Maryland, College Park, MD  
LCS 113:70:000

S-2 APPLYING QA TO NUCLEAR DEVELOPMENT PROGRAMS ..... 894  
**Wayne H. Caplinger**, Westinghouse Hanford Company, Richland, WA  
LCS 310:10:991

S-3 NEW DIRECTIONS IN QUALITY CONTROL IN CHECK PROCESSING ..... 899  
**Mirek R. Cejka**, Manufacturers Hanover Trust Company, New York, NY  
LCS 020:10:000

S-4 PLEASE DON'T SQUEEZE THE STATISTICS ..... 907  
**Francis J. Cullen**, Loyola College, Baltimore, MD  
LCS 100:00:000

S-5 MEASURING EMPLOYEE QUALITY PERFORMANCE ..... 914  
**Alfred H. Jaehn**, Consolidated Papers, Inc., Wisconsin Rapids, WI  
LCS 345:20:400

S-6 A QUALITY SYSTEM FOR CUSTOM ENGINEERED EQUIPMENT ..... 918  
**Charles P. Lamb, Jr.**, Dorr-Oliver, Inc., Stamford, CT  
LCS 353:70:000

S-7 PLANNING A QUALITY ASSURANCE DATA SYSTEM ..... 924  
**William L. Lieberman** and **Kenneth C. Gutman**, Abbott Laboratories,  
North Chicago, IL  
LCS 341:90:428

S-8 WHAT IS NBS DOING IN NDE? ..... 929  
**Leonard Mordfin** and **Harold Berger**, U.S. National Bureau of Standards,  
Washington, D.C.  
LCS 750:70:000

S-9 INFLATION AS MEASURE OF ENVIRONMENTAL QUALITY ..... 934  
**Miroslav Nadj, Henriette Nadj** and **John Nadj**, Environmental Technologies,  
Vista, CA  
LCS 010:00:000

S-10 PRODUCT CERTIFICATION QUALITY REQUIREMENTS ..... 939  
**Harvey E. Schock, Jr.**, Product Assurances Consulting, Haddonfield, NJ  
LCS 300:70:000

S-11 WHAT'S NEW WITH MIL-STD 105D (ANSI Z1.4-1980) ..... 944  
**John S. White**, University of Minnesota, Minneapolis, MN  
LCS 222:00:000

S-12 AN INTEGRATED APPROACH TO SUBCONTRACT SUPPORT ..... 947  
**August H. Ziegler** and **James B. Diggs**, Westinghouse Electric  
Corporation, Baltimore, MD  
LCS 650:40:436

## SPEAKERS/AUTHORS INDEX

|                         |          |                             |               |
|-------------------------|----------|-----------------------------|---------------|
| Aaron, Howard B.        | 21       | Dobbins, Richard K.         | 866           |
| Acheson, Jean           | 737      | Dollard, Joseph S.          | 62            |
| Alexanderson, Orjan B.  | 182      | Doty, Alan L.               | 217           |
| Alexandre, Ian          | 696      | Edson, Larry G.             | 31            |
| Alt, Frank B.           | 886      | Ekings, J. Douglas          | 343           |
| Alvarez, Ricardo J.     | 737      | Eldridge, Lawrence A.       | 206           |
| Amsden, Davida          | 835      | Esterby, L. James           | 138           |
| Amsden, Robert T.       | 835, 856 | Farrow, John H.             | 296           |
| Aubrey, Charles A. II   | 54, 195  | Fencl, Wendy Carol          | 54            |
| Bafna, Kailash M.       | 481      | Ferrel, Joseph C.           | 821           |
| Bajaria, Hans J.        | 158, 162 | Fjeldaa, Sven               | 447           |
| Baker, Edward M.        | 282      | Flynn, Robert J.            | 168           |
| Balani, Suresh N.       | 290      | Ford, K. C.                 | 240           |
| Baldonado, Orlino C.    | 825      | Freund, Richard A.          | 592           |
| Barra, Ralph J.         | 174      | Fyffe, David E.             | 410           |
| Bateman, Vernon W.      | 767      | Glaser, John H.             | 418           |
| Beard, Michael E.       | 760      | Goble, Jo Ann               | 158, 162      |
| Benson, Ferris B.       | 659      | Gold, Karen W.              | 659, 760      |
| Berger, Harold          | 929      | Gonzalez Hernandez, Agapito | 425           |
| Bhuyan, Samar K.        | 459      | Goodman, Alan L.            | 270           |
| Bischof, James R.       | 77, 637  | Gordon, John J.             | 335           |
| Blank, Arthur R.        | 90       | Gruska, Gregory F.          | 158, 162, 725 |
| Boskey, William J.      | 31       | Gugliotta, George           | 148           |
| Brantly, Eugene P. Jr.  | 760      | Gunneson, Alvin O.          | 373           |
| Breen, Joseph J.        | 760      | Gutman, Kenneth C.          | 924           |
| Breeze, John D.         | 552, 709 | Hagan, John T.              | 491           |
| Brewer, Clyde W.        | 872      | Hailey, William A.          | 453           |
| Burgess, John A.        | 70       | Harrington, H. James        | 101           |
| Caine, Robert V.        | 584      | Hartman, James W.           | 648           |
| Campanella, Jack        | 124      | Hays, Frank C.              | 607           |
| Caplinger, Wayne H.     | 894      | Heaphy, Maureen S.          | 725           |
| Carpenter, Benjamin H.  | 748      | Heldt, John J.              | 709           |
| Case, Kenneth E.        | 404      | Henke, John A.              | 202           |
| Cejka, Mirek R.         | 899      | Holmes, Richard K.          | 382           |
| Cichy, R. F.            | 1        | Hsiang, Thomas C.           | 335           |
| Cleary, Michael J.      | 835, 856 | Huff, Wesley A.             | 563           |
| Coleman, Larry R.       | 574      | Iwasaki, Hiroshi            | 611           |
| Constable, Gordon K.    | 835      | Jackson, James F.           | 798           |
| Coop, Phillip G.        | 653      | Jaeahn, Alfred H.           | 914           |
| Corcoran, Frank J.      | 124      | Johnson, Gary L.            | 756           |
| Cowan, Harold V.        | 319      | Kantrowitz, Julia           | 717           |
| Cullen, Francis J.      | 907      | Karrer, Carl W.             | 794           |
| Cunningham, Patricia A. | 659      | Kazor, Walter R.            | 849           |
| Dailey, Arlis           | 737      | Keane, John A.              | 441           |
| Dehne, Arthur W.        | 62       | Keats, John Bert            | 404           |
| Demetriou, James        | 860      | Keitges, Pierre W.          | 735           |
| Derr, James H.          | 38       | Kimball, Barbara K.         | 632           |
| Dhillon, Balbir S.      | 783      | Kofoed, Carl A.             | 433           |
| Diggs, Edward J.        | 391      | Lamb, Charles P. Jr.        | 918           |
| Diggs, James B.         | 947      | Langevin, Roger G.          | 475           |

## SPEAKERS/AUTHORS INDEX (CONT'D)

|                        |          |                            |     |
|------------------------|----------|----------------------------|-----|
| Latzko, William J.     | 485      | Rosenzweig, George         | 301 |
| Lee, Martin L.         | 717      | Rubinstein, Sidney P.      | 674 |
| Lee, Yong J.           | 179      | Rykiel, Aileen F.          | 531 |
| Lefevre, Henry L.      | 305      | Sappet, Edward J.          | 683 |
| Lentzen, Donald E.     | 760      | Scanlon, Frank             | 491 |
| Lieberman, William L.  | 924      | Schilling, Edward G.       | 602 |
| Locks, Mitchell O.     | 352      | Schock, Harvey E. Jr.      | 939 |
| Love, Kenneth S.       | 534      | Schumacher, Rolf B. F. Sr. | 153 |
| Lozano, Robert         | 841      | Sears, James A.            | 506 |
| Maass, Richard A.      | 379      | Seto, John M.              | 230 |
| Macdonald, Joyce C.    | 527      | Sexton, Nancy H.           | 659 |
| Marash, Stanley A.     | 645      | Shaw, Jack Joseph          | 519 |
| Marquardt, Donald W.   | 244      | Sherbo, Andrew J.          | 308 |
| Martin, Marge          | 558      | Singh, Chanan              | 783 |
| Mayben, James E.       | 465      | Sinibaldi, Frank J. Jr.    | 262 |
| McAdams, Eugene H.     | 84       | Stenecker, Robert G.       | 830 |
| McRobb, R. M.          | 428      | Sterett, W. Kent           | 821 |
| Mendis, Kenneth S.     | 777      | Stevens, Calvin            | 313 |
| Metwally, M.           | 95       | Stover, Allan C.           | 771 |
| Meyer, Robert P.       | 50       | Stroup, Cindy              | 760 |
| Michalek, Joseph M.    | 382      | Sullivan, Lawrence P.      | 275 |
| Mihalsky, John         | 212      | Sullivan, Shaun J.         | 45  |
| Miller, Ervin F.       | 538      | Szwartz, Gerald E.         | 531 |
| Miller, Richard M.     | 397      | Szymanski, Earl T.         | 8   |
| Mills, Charles A.      | 619      | Tarver, Mae-Goodwin        | 13  |
| Minter, Gary L.        | 513      | Tate, Robert G. Jr.        | 190 |
| Mordfin, Leonard       | 929      | Taylor, Mary               | 717 |
| Mundel, August B.      | 596, 791 | Thompson, Bernie           | 706 |
| Munro, Bruce           | 327      | Thresh, James L.           | 546 |
| Myers, Lawrence E.     | 659      | Tobey, Donald R.           | 145 |
| Nadj, Henriette        | 934      | Tolman, Fay E.             | 209 |
| Nadj, John             | 934      | Trainor, Eugene F.         | 695 |
| Nadj, Miroslav         | 934      | Trivedi, Shirish N.        | 580 |
| Nelson, A. Carl Jr.    | 667      | Trivedi, Sunil J.          | 884 |
| Nicholas, R. C.        | 1        | Ulla, Faz M.               | 108 |
| Nolan, Thomas J.       | 584      | Vosteen, Patricia Y.       | 637 |
| Ortwein, William J.    | 876      | Waclawiw, Myron A.         | 626 |
| Owusu-Ofori, Samuel P. | 805      | Watson, William C. Jr.     | 743 |
| Ozaki, Shinya          | 404      | Weinzettel, Gary G.        | 846 |
| Peach, Robert W.       | 249      | West, Andrew H.            | 237 |
| Pettigrew, David       | 118      | Wetzstein, Carl            | 254 |
| Phillipp, Thomas J.    | 569      | White, John S.             | 944 |
| Poyer, Thomas H.       | 584      | Williams, Ronald J.        | 360 |
| Proctor, Charles L.    | 783      | Wilson, Roger L.           | 697 |
| Pryor, Timothy R.      | 285      | Winchell, William O.       | 367 |
| Raheja, Dev            | 355      | Wirkus, Stephen R.         | 225 |
| Rashed, A. F.          | 95       | Wright, V. Gerald          | 811 |
| Reed, William A.       | 701      | Yoshida, Shuichi           | 688 |
| Rieker, Wayne S.       | 45       | Ziegler, August H.         | 947 |
| Rogers, Cephas B.      | 418      | Zimbler, Debra A.          | 195 |



## CONTENTS

|   | Pages  |
|---|--------|
| FOREWORD.....                                 | iv     |
| MESSAGE FROM CHAIRMAN, PROGRAM COMMITTEE..... | v      |
| TECHNICAL PAPER INDEX .....                   | vi     |
| SPEAKERS/AUTHORS INDEX .....                  | xx     |
| LITERATURE CLASSIFICATION SYSTEM INDEX .....  | xxii   |
| — METHODOLOGY CLASSIFICATION .....            | xxii   |
| — FUNCTIONAL CLASSIFICATION .....             | xxiv   |
| — INDUSTRY AND BUSINESS CLASSIFICATION .....  | xxv    |
| QUALITY CONGRESS PROGRAM COMMITTEE.....       | xxvi   |
| ASQC OFFICERS .....                           | xxviii |
| DETROIT HOST COMMITTEE .....                  | xxix   |
| ASQC TECHNICAL COMMITTEES.....                | xxx    |
| SUSTAINING MEMBERS .....                      | xxxvii |
| TECHNICAL PAPERS .....                        | 1      |